Safety in the Operating Room

SFC McAllister

Terminal Learning Objective

- Condition: Given the appropriate information
- Action: Identify the appropriate actions to prevent or reduce the potential hazards to health safety
- Standard: IAW cited references

Enabling Learning Objectives

- Condition: Given a list of safety features and guidelines
- Action: Select those applicable to electrical equipment
- Standard: IAW Alexander's

Enabling Learning Objectives Con't

- Condition: Given a list of safety features and guidelines
- Action: Identify those applicable to lasers
- Standard: IAW Berry and Kohn's

Enabling Learning Objectives Con't

- Condition: Given the appropriate information
- Action: Identify the contributing factors of fires in the operating room
- Standards: IAW Berry and Kohn's

Enabling Learning Objectives Con't

- Condition: Given the appropriate information
- Action: Select the fire safety preventive measures used for controlling flammable, supportive, and ignition agents
- Standard: IAW Berry and Kohn's

Enabling Learning Objectives Con't

- Given a list of safety measures
- Action: Select those used for storing, transporting, and handling pressurized gases
- Standard: IAW Berry and Kohn's

Enabling Learning Objectives Con't

- Condition: Given the appropriate information
- Action: Identify the potential injuries, effects, and preventive measures for anesthetic agents
- Standard: IAW Berry and Kohn's

Enabling Learning Objectives Con't

- Condition: Given the appropriate information
- Action: Identify the potential injuries, effects, and preventive measures for radiation exposure
- Standard: IAW Berry and Kohn's

Enabling Learning Objectives Con't

- Condition: Given the appropriate information
- Action: Identify the potential injuries, effects, and preventive measures used in preventing other occupational injuries in the operating room suite
- Standards: IAW Berry and Kohn's

Electrical Hazards

Electrical safety features

☺ Isolation power system - An assembly of electrical devices that provides local isolated power, a single grounding point, and a distinctive receptacle

☛ Reduces the hazard of shock or burn from electrical current flowing through

Isolation Power Systems

Isolation Power Systems/Line Isolation Monitors

Electrical Hazards

Guidelines for the safe use of elec
equipment

- **Biomedical Technician**
  - **Inspect for safety and proper fun**
    prior to use in the O.R.
    - **electrical cord length**
    - **handle appropriately**
    - **roll over cords with equipment**
    - **kinks/curls**

Types of LASER's and Safety

Common types of LASER's

- Carbon Dioxide Laser
- Argon Laser
- Neodymium Laser
  - Excimer Laser
  - Krypton Laser
  - Potassium Laser
  - Ruby Laser

CO2 LASER

Types of LASER's and Safety

Safety precautions

= Eye protection
= Warning signs on entry doors
= Remove key from laser
= Glass (non reflective)
= Moistened laps or towels availabl
= Smoke evacuating device
= Flammable prep solutions
= Standby & Stop options
= Special masks
= Foot pedal
= Non-reflective instruments

Fire Safety

Combustible - substance capable of reacting with O2 to burn if ignited.

Flammable - gas or liquid that will burn or is capable, when ignited, of maintaining combustion, with O2.

Agents - Alcohol, Acetone, Pressurized gases

Supportive Agent - Oxygen

Fire Safety

Ignition Agents -

electrical spark (equipment/person

Laser, light cords and cables.

Preventive measures -

humidity level between 50 - 60%, we

static garments (cotton, paper), dai

equipment inspection, proper air-co

or ventilating systems, defective equ

Safety Measures for Pressurized Gases

Storage

- **“NO SMOKING” signs**
- **Well ventilated, cool area**
- **Tanks stored with valve protection caps**
- **Cylinders chained upright and secured to a wall or in appropriate racks**
- **Full/empty cylinders stored**

Safety Measures for Pressurized Gases

Transportation

- Never drag, hand carry, roll or drop cy
- Use cylinder cart or truck with safety s chain
- Do not allow cylinders to be struck or s each other
- Do not handle or use a leaking cylinde
- Secure valve protection cap

Safety Measures for Pressurized Gases

Handling

∗ Do NOT use grease or oil on the valve

∗ Clear the valve before attaching gauge

∗ Brass wrenches are used when attaching

or detaching lines

Anesthetic Agents

Potential injuries and effects

- **Possible fetal injury (first trimester)**
- **Possible liver damage (Flourane gas)**

Anesthetic Agents

Preventive measures

- "Low flow" anesthetic systems reduc
  volume of waste gases
- Waste scavenging systems
- Maintain distance from equipment/
  during induction
- Air exchanges
  - re-filter 20-30 times per hour
  - replaced with fresh air 5 times per

XRAY MACHINES

Radiation exposure

Potential injuries and effects

- **Sterility**
- **Anemia (injury to bone marrow)**
- **Fetal injury**
- **Cataracts**
- **Cancer**

Radiation exposure

Preventive measures

- Stay out of direct beam of radiation
- Lead aprons and thyroid shields
- Shield patient as much as surgery al
- Careful handling and periodic exami of leaded garments

Radiation exposure cont.

- Inspected by preventive medicine
- Replace when integrity of garment is compromised
- Store in appropriate areas

* Periodic radiation safety classes and staff monitoring by

Radiation exposure cont.

Latex sensitivity/allergy

- **Two responses personnel have from latex products**
  - **Systemic - severe reation to latex that comes in contact with mucous membranes or peritoneum during a surgical procedure may cause**

Other Occupational hazards

- **Sources**
  - **Surgical gloves**
  - **Catheters**
  - **Drains**
  - **IV tubing**
  - **Endotracheal tubes**

Preventive measures

- **Ask patient**
- **Use non-latex products if allergy is**

Other Occupational hazards

Burns

- **Autoclave**
  - **Steam**
  - **Jacket metal**
- **Electrosurgical unit (Bovie machine)**

Other Occupational hazards

Preventive measures

- Close autoclave door tightly before
- Open door only when exhaust valve registers zero
- Stand behind the door and open slo to avoid steam escaping around d
- Ensure correct placement of the Bo grounding pad on patient

Other Occupational hazards

Lifting injuries

- **Potential injuries**
  - **Injury to patient (if dropped)**
  - **Injury to personnel**
  - **Damage to equipment**

Other Occupational hazards

Preventive measures

- Use proper body mechanics when rea
  lifting, or moving patients

  - Use adequate number of personnel wh
    heavy patients
  - Always lift with the knees, not with the
  - Keep objects close to the body when li
  - No NOT twist at the waist when lifting
    objects
  - Use any lifting aid available when lifti
    objects

Other Occupational hazards

Falls

- **Sources**
  - **Wet Floors**
  - **Electrical cords and equipment**
  - **Carelessness or hurrying**

Other Occupational hazards

Preventive measures

- When floor is wet use caution and u
  "WET FLOOR" sign
- "Do NOT run", walk briskly when i
  a hurry
- Avoid walking backwards
- Tape down and secure loose cords

“Questions”?